

Remarks/Arguments:

Pending Claims

Claims 104-123 and 125-127 are pending. Claims 1-103 and 124 have been canceled.

Claims 104, 112, 118, 120, 122, and 126 have been amended to correct minor clerical errors. Claim 120 has also been amended to correct a minor typographical error. No new matter has been added by these amendments, nor has the scope of these claimed been narrowed by these amendments.

Allowed Claims

Claim 127 has been allowed.

Claim Objections

Claims 111-114 and 118 have been objected to as being dependent on a rejected base claim. Applicants respectfully submit that this objection is moot in view of the reasons set forth below.

Claim 120 has been objected to due to informalities. Claim 120 has been amended to correct this typographical error.

Applicants also note that claim 119 is listed as objected to in the Office Action Summary, but is not addressed in the Detailed Action.

Reconsideration and allowance of claims 111-114 and 118-120 is requested.

Rejections under 35 USC §102(b)

Claims 104-107, 115, 121-123, 125, and 126 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Deck (US 5,953,124). Applicants respectfully submit that this rejection is traversed for the reason set forth below.

Deck discloses interferometric methods and systems that use low coherence illumination and exhibit improved precision and flexibility. Abstract. In these methods and systems, a phase shifting interferometry (PSI) analysis and a scanning white light interferometry (SWLI) analysis are applied to a single 3D interferogram. Abstract. Figure 1 illustrates a system (10) for obtaining interferometric measurements. Column 7, lines 8-9.

This system includes a low coherence source of illumination (12) which produces an incident light beam (14), which is reflected from an optical element (16) towards an interferometric objective or interferometer (18). Column 7, lines 9-13. The interferometer (18) includes a lens (20) that focuses the incident light beam (14) and a beam splitter (22) that splits the incident light beam into a test light beam (24), which is directed towards a test

surface (28) of a test object (29), and a reference light beam (26), which is directed towards a reference surface (30). Column 7, lines 13-19.

A scanning and phase shifting apparatus (32) varies the optical path difference and a phase shift between the test light beam (24) and the reference light beam (26). Column 7, lines 20-23. The scanning velocity is controlled by the computer (33). Column 7, lines 27-28.

The test light beam (24) and the reference light beam (26) are reflected from the test surface (28) and the reference surface (30), respectively, and recombined by the beam splitter (22) so as to form a recombined light beam (34). Column 7, lines 30-34. The recombined light beam (34) is directed towards an imaging array (36) and an interferogram formed by the recombined light beam (34) is imaged thereon. Column 7, lines 37-39.

A frame grabber (38), which is controlled by computer (33), saves data acquired by the imaging array (36). Column 7, lines 47-58. The interference data acquired by the imaging device (36) and saved by the frame grabber (38) is fed directly from the frame grabber (38) to the computer (33), which includes one or more computer programs (for example, in the form of software or firmware) to process the interference data. Column 7, lines 59-65.

The computer (33) processes the interference data to determine a surface height associated with each pixel of the imaging array (36). Column 7, line 66, through column 8, line 30.

Independent claim 104 recites a feature that is neither disclosed nor suggested by Deck, namely:

...an image enhancer operable to enhance image data representing a set of light intensity data to be displayed on a display to facilitate the detection by a user of the interference fringes. (Emphasis added.)

Independent claims 122 and 126 include similar features.

This feature is described generally in the specification at page 18, lines 3-8. Specific examples of this feature are described on pages 18-29 with reference to Figures 9-22. As recited in independent claim 104, this image enhancer "...[facilitates] the detection by a user of the interference fringes," in image data that is "...to be displayed on a display..."

In column 7, lines 61-65, Deck discloses that "...computer 33 includes one or more computer programs (for example, in the form of software or firmware) which is executed by a microprocessor of the computer to process the interference data." The Examiner has asserted that the computer may, therefore, be "viewed as an image enhancer that is connected to a display." Paragraph 4, on page 3 of the Office Action. Applicants respectfully disagree.

As described above, Deck explicitly ascribes several functions to computer 33: controlling the scanning velocity of scanning and phase shifting apparatus 32 (column 7, lines 27-28); controlling frame grabber 38 (column 7, lines 57-58); and processing the interference

data to determine a surface height associated with each pixel (column 7, line 66, through column 8, line 30). However, there is no teaching or suggestion in Deck that the disclosed "...one or more computer program..." may include any image enhancing programs. Further, although Figure 1 of Deck includes monitor 42, this element is **not** shown to be connected to computer 33 in Figure 1 and Deck does not include any reference to this monitor in the specification. The only disclosure by Deck regarding displaying any data is that "...the test surface profile can be displayed in a conventional manner." Column 10, lines 29-30 (emphasis added).

Therefore, Applicants respectfully submit that Deck does not suggest or teach "...an image enhancer operable to enhance image data... ...to be displayed on a display..." as recited in independent claim 104 of the present application.

Based on the reasons set forth above, independent claims 104, 122, and 126 are not subject to rejection under 35 U.S.C. § 102(b) as anticipated by Cohen et al. As claims 105-107, 115, and 121 depend from claim 104 and claims 123 and 125 depend from claim 122, these claims are not subject to this rejection as well.

Rejections under 35 USC §103(a)

Claims 108-110 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Deck in view of Ai et al. (US 5,471,303). Applicants respectfully submit that this rejection is traversed for the reason set forth below.

Ai et al. disclose an interferometric apparatus that combines white-light vertical scanning interferometry and single-wavelength phase scanning interferometry capabilities to improve the accuracy of height measurements in steep regions and in areas with large inter-pixel steps on the test surface. Abstract. Ai et al. do not disclose any means of displaying image data. Therefore, Ai et al. cannot suggest or teach "...an image enhancer operable to enhance image data... ...to be displayed on a display..." as recited in independent claim 104 of the present application.

Claims 108-110 depend from independent claim 104. Thus, Deck has at least the same deficiencies with regard to claims 108-110 as those described above with regard to claim 104. Ai et al. cannot overcome these deficiencies.

Because there is at least one feature recited in independent claim 104 that is not disclosed or suggested in Deck or Ai et al., singly or in combination, Applicant respectfully submits that this rejection does not set forth a *prima facie* case of obviousness for claims 108-110. Thus, claims 108-110 can not be subject to rejection under 35 U.S.C. § 103(a) as unpatentable over Deck in view of Ai et al.

Claims 116 and 117 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Deck in view of Webster (US 4,040,747). Applicants respectfully submit that this rejection is traversed for the reason set forth below.

Webster discloses an automatic test instrument for gauging the percentage of various constituents in organic substances by comparing the reflective optical density of the subject at various wavelengths. Abstract. Webster does not disclose using image data. Therefore, Webster cannot suggest or teach "...an image enhancer operable to enhance image data ..." as recited in independent claim 104 of the present application.

Claims 116 and 117 depend from independent claim 104. Thus, Deck has at least the same deficiencies with regard to claims 116 and 117 as those described above with regard to claim 104. Webster cannot overcome these deficiencies.

Because there is at least one feature recited in independent claim 104 that is not disclosed or suggested in Deck or Webster, singly or in combination, Applicant respectfully submits that this rejection does not set forth a *prima facie* case of obviousness for claims 116 and 117. Thus, claims 116 and 117 can not be subject to rejection under 35 U.S.C. § 103(a) as unpatentable over Deck in view of Webster.

Based on the preceding arguments, Applicants respectfully request reconsideration and allowance of claims 104-123 and 125-127.

Respectfully submitted,



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